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Cal Poly Team Wins International Vehicle Safety Technology Design Competition in Seoul, Korea

SAN LUIS OBISPO — Collision-avoidance technology created by a team of Cal Poly mechanical engineering students took first place at the Enhanced Safety of Vehicles (ESV) International Collegiate Student Safety Technology Design Competition held May 27-30 in Seoul, Korea.

Ian Painter and Elliot Carlson, both seniors, and Thomas Stevens, a graduate student, developed a tenth-scale vehicle prototype that uses a light detection and ranging (LIDAR) sensor to aid a driver in last-minute maneuvers around a crash obstacle.

In March, Cal Poly was chosen by the U.S. Department of Transportation (DOT) as one of two finalist teams to represent North America at the international technical conference. They competed against finalists from Korea and Japan. The student competition was sponsored by the National Highway Traffic Safety Administration and the DOT.

“The event is all about the cutting edge of vehicle safety technology. Crash and injury mitigation have been huge topics of research for many years, but the next logical step is to avoid collisions entirely,” Painter said. “With this year’s release of the first steer-by-wire car (in which the steering wheel is linked to the wheels by computer), it’s clear that autonomous steering maneuvers are becoming a realizable proposition.

“It was exciting to learn that we were investigating many of the same problems and opportunities that major automotive companies are looking at right now. We had that moment of realization at the conference. We were located directly across from Mercedes. Talking with representatives there, we learned that the company is pouring millions of dollars into research on human-vehicle interface in order to better understand how and when to take control from a driver. That’s something that we also investigated in our project.”

The team’s faculty advisor, Charles Birdsong, has been working on collision avoidance for many years through student projects and sponsored projects.

This year’s success, he noted, combined Learn by Doing with the knowledge accrued and shared by successive student teams.

“This was Cal Poly’s fourth entry into the competition. Our students had made it to the international finals two times before, but this is our first win. This year’s project was an extension of many students’ work, including a grad student, Nikola Noxon, who worked on the stability control problem, and the senior project team of 2010 that put the car together and implemented the path-planning algorithm.”

“Our team members this year are particularly proud of the fact that we designed with the user in mind,” added Painter. “Our system functions extremely well and is designed so that someone driving the car will leave feeling excited and satisfied. We also preempted many of the judging panel’s ‘why didn’t you ...’ and ‘what if ...’ questions, which I believe is a large part of this year’s success.”

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